AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions and listings of claims in the application:

1. (Currently amended)   A computer-implemented method for generating a library design for a combinatorial library of materials, comprising:

providing a graphical user interface including a workspace for designing a library of materials;

defining one or more sources and one or more destinations, each source being electronic data representing a chemical or mixture of chemicals to be used in preparing the combinatorial library and each destination being electronic data representing an arrangement of cells;

displaying a visual representation of one or more of the one or more defined destinations in the workspace of the graphical user interface, each destination representation including a representation of one or more cells in the corresponding arrangement;

receiving first user input defining a first mapping, the first mapping being electronic data defining a gradient distribution pattern for assigning a first chemical or mixture of chemicals represented by one of the one or more defined sources to a plurality of cells in the one or more defined destinations, the input specifying the gradient distribution pattern according to a minimum and a maximum amount of the first chemical or mixture of chemicals to be assigned to any of the plurality of cells and a gradient to be applied between the minimum and maximum amounts of the first chemical or mixture of chemicals across the plurality of cells;

receiving second user input defining a second mapping, the second mapping being electronic data defining a second distribution pattern describing an amount or amounts of a second chemical or mixture of chemicals to be distributed to one or more selected cells in the one or more arrangements, the one or more selected cells including one or more of the plurality of cells;

using the first mapping and the second mapping to calculate determine amounts of

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the first chemical or mixture of chemicals <u>and the second chemical or mixture of chemicals</u> to be deposited in each of <u>the one or more selected cells included in</u> the plurality of cells; and

modifying the visual representation of the one or more defined destinations to include a visual indication of the ~~calculated~~ <u>determined</u> amounts <u>of the first and second chemicals or mixtures of chemicals</u>.

Claim 2. Cancelled.

3. (Previously presented)   The method of claim 1, wherein the defining the one or more sources and one or more destinations comprises receiving user input specifying properties associated with the one or more sources and one or more destinations.

4. (Previously presented)   The method of claim 1, wherein defining the one or more sources and one or more destinations comprises receiving an input from a graphical input device.

5. (Currently amended)   The method of claim 1, wherein the <u>first</u> input defining a first mapping comprises a selection from a set of available mapping types, the set of available mapping types comprising a one to one mapping of a chemical or mixture of chemicals from a source to a cell in the one or more arrangements and a one to many mapping of a chemical or mixture of chemicals from a source to a plurality of cells in the one or more arrangements.

6. (Previously presented)   The method of claim 5, wherein the set of available mapping types further comprises a many to many mapping of a plurality of chemicals or mixtures of chemicals from a plurality of sources to a plurality of cells in the one or more arrangements.

7. (Previously presented)   The method of claim 6, wherein the set of available mapping types further comprises a many to one mapping of a plurality of chemicals or

mixtures of chemicals from a plurality of sources to a cell in the one or more arrangements.

8. (Original)   The method of claim 5, wherein the set of available mapping types further comprises a set of one or more user-defined equations.

9. (Original)   The method of claim 1, wherein the gradient is selected from the group consisting of linear, logarithmic, exponential, polynomial and geometric progression.

Claim 10. Cancelled.

Please cancel claim 11 without prejudice.

12. (Currently amended)   The method of claim ~~11~~ 1, wherein the second distribution pattern for includes electronic data identifying a fixed amount of the second chemical or mixture of chemicals to be distributed to one or more cells in the one or more arrangements.

13. (Currently amended)   The method of claim ~~11~~ 1, wherein the second input specifies a second gradient distribution pattern according to a minimum and a maximum amount of the second chemical or mixture of chemicals to be assigned to a second plurality of cells of the one or more arrangements and a second gradient to be applied between the minimum and maximum amounts of the second chemical or mixture of chemicals across the second plurality of cells.

14. (Currently amended)   The method of claim ~~9~~ 1, further comprising:
        receiving user input modifying one or more of the ~~plurality of~~ first and second mappings; and
        modifying the visual representation of the one or more defined destinations according to the one or more modified mappings.

Claims 15-18. Cancelled.

19. (Currently amended)   A computer-implemented method for generating a library design for a combinatorial library of materials, comprising:

providing a graphical user interface including a workspace for designing a library of materials;

defining one or more sources and one or more destinations, each source being electronic data representing a chemical or mixture of chemicals to be used in preparing the combinatorial library and each destination being electronic data representing an arrangement of cells;

displaying a visual representation of one or more of the one or more defined destinations in the workspace of the graphical user interface, each destination representation including a representation of one or more destination areas, each destination area including one or more cells in the corresponding arrangement;

receiving user input associating each of the one or more sources with one or more of the destination areas;

receiving user input specifying a plurality of equations and associating ~~one or more~~ each of the plurality of equations with one or more of the one or more destination areas;

solving the plurality of equations to calculate one or more amounts of one or more first chemicals or mixtures of chemicals represented by the one or more defined sources to be assigned to one or more cells in the one or more arrangements represented by the one or more defined destinations, the one or more amounts of the one or more first chemicals or mixtures of chemicals to be assigned to a given cell in the one or more arrangements being calculated according to a set of equations comprising a plurality of the ~~one or more~~ equations, the equations in the set of equations being associated with the area or areas ~~including~~ that include the cell, the one or more first chemicals or mixtures of chemicals to be assigned to the given cell being determined by the one or more sources associated with the area or areas that include the cell; and

modifying the visual representation of the one or more defined destinations to include a visual indication of the one or more calculated amounts.

20. Cancelled.

Please cancel claims 21 and 22 without prejudice.

23. (Previously presented)   The method of claim 19, further comprising:

generating an error indicator signal if the plurality of equations cannot be solved for each cell in the one or more arrangements.

24. (Previously presented)   The method of claim 19, wherein at least one of the plurality of equations is selected from the group consisting of:

a ratio equation defining an amount of one of the first chemicals or mixtures of chemicals to be assigned to a cell as a function of an amount of another chemical or mixture of chemicals to be assigned to the cell;

a volume equation defining an amount of one of the first chemicals or mixtures of chemicals to be assigned to a cell as a function of a total volume of a plurality of chemicals or mixtures of chemicals to be assigned to the cell; and

a mass equation defining an amount of one of the first chemicals or mixtures of chemicals to be assigned to a cell as a function of a total mass of a plurality of chemicals or mixtures of chemicals to be assigned to the cell.

Claims 25-26. Cancelled.

27. (Previously presented)   The method of claim 19, wherein solving the plurality of equations comprises using matrix algebra techniques to solve the plurality of equations.

Claim 28. Cancelled.

29. (Previously presented)   The method of claim 19, further comprising:

receiving an input defining a gradient mapping, the gradient mapping being electronic data defining a distribution pattern for distributing a second chemical or

mixture of chemicals to cells in the one or more arrangements, the distribution pattern including a minimum and a maximum amount of the second chemical or mixture of chemicals to be assigned to any of a plurality of cells of the one or more arrangements and a gradient to be applied between the minimum and maximum amounts of the second chemical or mixture of chemicals across the plurality of cells; and

using the second mapping to calculate amounts of the second chemical or mixture of chemicals to be deposited in each of the plurality of cells;

wherein modifying the visual representation of the one or more defined destinations comprises modifying the visual representation to include a visual indication of the calculated amounts of the first and second chemicals or mixtures of chemicals.

Claims 30-36. Cancelled.

37. (Currently amended)   A computer program product on a computer-readable medium for generating a library design for a combinatorial library of materials, the computer program product comprising instructions operable to cause a programmable processor to:

provide a graphical user interface including a workspace for designing a library of materials;

receive an input defining one or more sources and one or more destinations, each source being electronic data representing a chemical or mixture of chemicals to be used in preparing the combinatorial library and each destination being electronic data representing an arrangement of cells;

display a visual representation of one or more of the one or more defined destinations in the workspace of the graphical user interface, each destination representation including a representation of one or more cells in the corresponding arrangement;

receive <u>first</u> user input defining a first mapping, the first mapping being electronic data defining a gradient distribution pattern for assigning a first chemical or mixture of chemicals represented by one of the defined sources to a plurality of cells in the one or more defined destinations, the input specifying the gradient distribution pattern according

to a minimum and a maximum amount of the first chemical or mixture of chemicals to be assigned to any of the plurality of cells and a gradient to be applied between the minimum and maximum amounts of the first chemical or mixture of chemicals across the plurality of cells;

receive second user input defining a second mapping, the second mapping being electronic data defining a second distribution pattern describing an amount or amounts of a second chemical or mixture of chemicals to be distributed to one or more selected cells in the one or more arrangements, the one or more selected cells including one or more of the plurality of cells;

use the first mapping to ~~calculate~~ determine amounts of the first chemical or mixture of chemicals to be deposited in each of the plurality of cells and the second mapping to determine the amount or amounts of the second chemical or mixture of chemicals to be deposited in each of the one or more selected cells, wherein the amounts of the first and second chemicals or mixture of chemicals to be deposited in each of the one or more selected cells that are included in the plurality of cells are determined according to both the first mapping and the second mapping; and

modify the visual representation of the one or more defined destinations to include a visual indication of the ~~calculated~~ determined amounts of the first and second chemicals or mixtures of chemicals.

38. Cancelled.

39. (Previously presented)   The computer program product of claim 37, wherein the instructions operable to cause a programmable processor to define the one or more sources and one or more destinations comprise instructions operable to cause a programmable processor to receive user input specifying properties associated with the one or more sources and one or more destinations.

40. (Previously presented)   The computer program product of claim 37, wherein the input defining the one or more sources and one or more destinations comprises an input from a graphical input device.

41. (Currently amended)   The computer program product of claim 37, wherein the first input defining a first mapping comprises a selection from a set of available mapping types, the set of available mapping types comprising a one to one mapping of a chemical or mixture of chemicals from a source to a cell in the one or more arrangements and a one to many mapping of a chemical or mixture of chemicals from a source to a plurality of cells in the one or more arrangements.

42. (Previously presented)   The computer program product of claim 41, wherein the set of available mapping types further comprises a many to many mapping of a plurality of chemicals or mixtures of chemicals from a plurality of sources to a plurality of cells in the one or more arrangements.

43. (Previously presented)   The computer program product of claim 42, wherein the set of available mapping types further comprises a many to one mapping of a plurality of chemicals or mixtures of chemicals from a plurality of sources to a cell in the one or more arrangements.

44. (Previously presented)   The computer program product of claim 40, wherein the set of available mapping types further comprises a set of one or more user-defined equations.

45. (Previously presented)   The computer program product of claim 37, wherein the gradient is selected from the group consisting of linear, logarithmic, exponential, polynomial and geometric progression.

46. Cancelled.

Please cancel claim 47 without prejudice.

48. (Currently amended)   The computer program product of claim ~~47~~ 37, wherein the second distribution pattern includes electronic data identifying a fixed amount of the

second chemical or mixture of chemicals to be distributed to one or more cells in the one or more arrangements.

49. (Currently amended)   The computer program product of claim 4̶8̶ 37, wherein the second input specifies a second gradient distribution pattern according to a minimum and a maximum amount of the second chemical or mixture of chemicals to be assigned to a second plurality of cells of the one or more arrangements and a second gradient to be applied between the minimum and maximum amounts of the second chemical or mixture of chemicals across the second plurality of cells.

50. (Previously presented)   The computer program product of claim 9̶6̶ 37, further comprising instructions operable to cause a programmable processor to:

receive an input modifying one or more of the p̶l̶u̶r̶a̶l̶i̶t̶y̶ ̶o̶f̶ first and second mappings; and

modify the visual representation of the one or more defined destinations according to the one or more modified mappings.

Claims 51-54. Cancelled.

55. (Currently amended)   A computer program product on a computer-readable medium for generating a library design for a combinatorial library of materials, the computer program product comprising instructions operable to cause a programmable processor to:

provide a graphical user interface including a workspace for designing a library of materials;

define a set of one or more sources and one or more destinations, each source being electronic data representing a chemical or mixture of chemicals to be used in preparing the combinatorial library and each destination being electronic data representing an arrangement of cells;

display a visual representation of one or more of the one or more defined destinations in the workspace of the graphical user interface, each destination

representation including a representation of one or more destination areas, each

destination area including one or more cells in the corresponding arrangement;

receive user input associating each of the one or more sources with one or more of

the destination areas;

receive user input specifying a plurality of equations and associating one or more

each of the plurality of equations with one or more of the destination areas;

solve the plurality of equations to calculate one or more amounts of one or more

first chemicals or mixtures of chemicals represented by the one or more defined sources

to be assigned to one or more cells in the one or more arrangements represented by the

one or more defined destinations, the one or more amounts of the one or more first

chemicals or mixtures of chemicals to be assigned to a given cell in the one or more

arrangements being calculated according to a set of equations comprising a plurality of

the one or more equations, the equations in the set of equations being associated with the

area or areas including that include the cell, the one or more first chemicals or mixtures

of chemicals to be assigned to the given cell being determined by the one or more sources

associated with the area or areas that include the cell; and

modify the visual representation of the one or more defined destinations to

include a visual indication of the one or more calculated amounts.

56. Cancelled.

Please cancel claims 57 and 58 without prejudice.

59. (Previously presented)   The computer program product of claim 55, further

comprising instructions operable to:

generate an error indicator signal if the plurality of equations cannot be solved for

each cell in the one or more arrangements.

60. (Previously presented)   The computer program product of claim 55, wherein at

least one of the plurality of equations is selected from the group consisting of:

a ratio equation defining an amount of one of the first chemicals or mixtures of

chemicals to be assigned to a cell as a function of an amount of another chemical or mixture of chemicals to be assigned to the cell;

a volume equation defining an amount of one of the first chemicals or mixtures of chemicals to be assigned to a cell as a function of a total volume of a plurality of chemicals or mixtures of chemicals to be assigned to the cell; and

a mass equation defining an amount of one of the first chemicals or mixtures of chemicals to be assigned to a cell as a function of a total mass of a plurality of chemicals or mixtures of chemicals to be assigned to the cell.

Claims 61-62. Cancelled.

63. (Previously presented)   The computer program product of claim 55, wherein the instructions operable to cause a programmable processor to solve the plurality of equations comprise instructions to use matrix algebra techniques to solve the plurality of equations.

Claim 64. Cancelled.

65. (Previously presented)   The computer program product of claim 55, further comprising instructions operable to:

receive an input defining a gradient mapping, the gradient mapping being electronic data defining a distribution pattern for distributing a second chemical or mixture of chemicals to cells in the one or more arrangements, the distribution pattern including a minimum and a maximum amount of the second chemical or mixture of chemicals to be assigned to any of a plurality of cells of the one or more arrangements and a gradient to be applied between the minimum and maximum amounts of the second chemical or mixture of chemicals across the plurality of cells; and

use the second mapping to calculate amounts of the second chemical or mixture of chemicals to be deposited in each of the plurality of cells;

wherein the instructions operable to cause a programmable processor to modify the visual representation of the one or more defined destinations include instructions

operable to cause a programmable processor to modify the visual representation to include a visual indication of the calculated amounts of the first and second chemicals or mixtures of chemicals.

Claims 66-90. Cancelled.

Please cancel claim 91 without prejudice.

92. (Previously presented)   The method of claim 19, further comprising:

receiving user input dividing one or more of the one or more destination representations to define the destination areas.

Please cancel claim 93 without prejudice.

94. (Currently amended)   The method of claim 19, further comprising:

in response to the user input specifying and associating the equations, modifying the visual representation of the one or more defined destinations to include a visual indication of the ~~one or more~~ equations associated with the one or more destination areas.

95. (Previously presented)   The method of claim 19, wherein:

defining the one or more sources comprises associating one or more of the chemicals or mixtures of chemicals with a type representing a class of chemicals to be used in preparing the combinatorial library;

receiving user input specifying a plurality of equations comprises receiving user input specifying one or more of the plurality of equations as a function of the type; and

solving the equations comprises solving the equations specified as a function of the type for a given destination area by substituting the corresponding associated chemical or chemicals associated for the type.

Please cancel claim 96 without prejudice.

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97. (Previously presented)   The computer program product of claim 55, further comprising instructions operable to cause a programmable processor to:

receive user input dividing one or more of the destination representations to define the destination areas.

Please cancel claim 98 without prejudice.

99. (Currently amended)   The computer program product of claim 55, further comprising instructions operable to cause a programmable processor to:

modify the visual representation of the one or more defined destinations in response to the user input specifying and associating the equations to include a visual indication of the one or more equations associated with the one or more destination areas.

100. (Previously presented)   The computer program product of claim 55, wherein:

the instructions operable to cause a programmable processor to define the one or more sources comprise instructions operable to cause a programmable processor to associate one or more of the chemicals or mixtures of chemicals with a type representing a class of chemicals to be used in preparing the combinatorial library;

the instructions operable to cause a programmable processor to receive user input specifying a plurality of equations comprise instructions operable to cause a programmable processor to receive user input specifying one or more of the plurality of equations as a function of the type; and

instructions operable to cause a programmable processor to solve the equations comprise instructions operable to cause a programmable processor to solving the equations specified as a function of the type for a given destination area by substituting the corresponding associated chemical or chemicals associated for the type.

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